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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,395	04/19/2004	Michael B. Korzenski	020732-214.539 CIP (7496)	3117
24239 7590 11/29/2006 MOORE & VAN ALLEN PLLC P.O. BOX 13706 Research Triangle Park, NC 27709			EXAMINER WEBB, GREGORY E	
			ART UNIT 1751	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/827,395

Applicant(s)

KORZENSKI ET AL.

Examiner

Gregory E. Webb

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 12-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>0906</u> . | 6) <input type="checkbox"/> Other: _____ |

[Signature]
1/17/07

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 6/1/06 have been fully considered but they are not persuasive.
2. The applicant argues that the method claims and composition claims require the same composition requirements. The examiner agrees the compositions are identical. However, the method claim requires limitations not found in the compositional claim and would require additional searching.
3. The examiner agrees with the applicant's arguments regarding the rejoining. If a composition is found to be allowable the applicant may make the method claims depend upon the allowed composition claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoy, Kenneth L. (US5306350).

Concerning the supercritical fluid and the claimed supercritical gas, Hoy, Kenneth L. teaches the following:

Near-**supercritical** liquids also demonstrate solubility characteristics and other pertinent properties similar to those of **supercritical fluids**. The solute may be a

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liquid at the **supercritical** temperatures, even though it is a solid at lower temperatures. In addition, it has been demonstrated that fluid "modifiers" can often alter **supercritical fluid** properties significantly, even in relatively low concentration, greatly increasing solubility for some solutes. These variations are considered to be within the concept of a **supercritical fluid** as used in the context of this invention. Therefore, as used herein, the phrase "**supercritical fluid**" denotes a compound above, at, or slightly below the critical temperature and pressure (the critical point) of that compound. Examples of **compressed gases** that are known to have utility as **supercritical fluids** include: **carbon dioxide**, **ammonia**, nitrous oxide, **xenon**, **krypton**, methane, ethane, ethylene, propane, chlorotrifluoromethane, monofluoromethane, and the like. (*emphasis added*)

Concerning the co-solvent, Hoy, Kenneth L. teaches the following:

Specific coupling solvents (which are listed in order of most effectiveness to least effectiveness) include butoxy ethanol, propoxy ethanol, hexoxy ethanol, isopropoxy 2-propanol, butoxy 2-propanol, propoxy 2-propanol, tertiary butoxy 2-propanol, ethoxy ethanol, butoxy ethoxy ethanol, propoxy ethoxy ethanol, hexoxy ethoxy ethanol, methoxy ethanol, methoxy 2-propanol, and ethoxy ethoxy ethanol. Also included are lactams such as n-methyl-2-pyrrolidone, and cyclic ureas such as dimethyl ethylene urea. (*emphasis added*)

Concerning the claimed reducing agent, Hoy, Kenneth L. teaches the following:

Generally, the polymeric components which the cleaning mixture of the present invention will be able to dissolve and/or suspend so as to remove them from an apparatus include vinyl, acrylic, styrenic, and interpolymers of the base vinyl, acrylic, and styrenic monomers; polyesters, oil-free alkyds, alkyds, and the like; polyurethanes, two-package polyurethane, oil-modified polyurethanes and thermoplastic urethanes systems; epoxy systems; phenolic systems; cellulosic esters such as acetate butyrate, acetate propionate, and nitrocellulose; amino resins such as urea **formaldehyde**, melamine **formaldehyde**, and other aminoplast polymers and resins materials; natural gums and resins; rubber-based adhesives including nitrile rubbers which are copolymers of unsaturated nitriles with dienes, styrene-butadiene rubbers, thermoplastic rubbers, neoprene or polychloroprene rubbers, and the like. (*emphasis added*)

Concerning the photoresist, Hoy, Kenneth L. teaches the following:

The **semiconductor** industry also utilizes supercritical fluid, especially carbon dioxide, for cleaning. Japanese Patent No. 01,045,131, dated Feb. 17, 1989, teaches the washing and oxidizing of a semiconductive **wafer** by washing it first with supercritical or liquefied carbon dioxide and then the **wafer** is contacted with carbon dioxide including at least one kind of substance having oxygen to oxidize the silicon surface of the semiconductive **wafer**. The washing and oxidizing is performed in one tank, thereby reducing the possible contamination of the **wafer** by exposure to the atmosphere. Japanese Patent No. 60,192,333, issued Sep. 30, 1985, discloses a method for removing a hardened organic film from the substrate

to which it is bonded, and in particular concerns a method which is suitable for mechanically peeling off the coated film of a **photoresist** coated film on a **semiconductor wafer**. In this case, the substrate with the hardened bonded organic film is first put under high pressure, mixed with a liquified gas and then brought into contact with a supercritical gas, after which the temperature and pressure conditions are changed to cause the gas to expand, and the hardened organic film is removed from the substrate by this expansion force. The liquid gas or the supercritical gas is dissolved either on the hardened organic film itself or at the interface between the organic film and the substrate. When either the pressure is decreased and/or the temperature is increased, the dissolved gas inside the hardened organic film or in the interface between the film and the substrate expands, resulting in the exfoliation of the hardened organic film from the substrate. The preferred liquified gas or supercritical gas is carbon dioxide, in which case it is desirable to add an organic solvent in which carbon dioxide is highly soluble to improve permeation into the hardened organic film and its substrate. (*emphasis added*)

6. Claims 1-6, 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Mullee, William H. (US6277753).

Concerning the supercritical fluid, photoresist and the claimed supercritical gas, Mullee, William H. teaches the following:

The post-CMP cleaning process of the present invention includes the following steps. The **wafer** is placed in the **wafer** process chamber. The post-CMP cleaning system is preferably purged with inert gas or the **carbon dioxide**. Alternatively, the post-CMP cleaning system is not purged. Next, the post-CMP cleaning system is pressurized with the **carbon dioxide** to achieve **supercritical** conditions. A desired amount of the chemical is added into the **carbon dioxide**, which forms chemical laden **supercritical carbon dioxide**. The chemical-laden **supercritical carbon dioxide** is contacted with the **wafer**. The **wafer** process chamber is preferably flushed using the **supercritical carbon dioxide** to remove contaminants. Alternatively, the **wafer** process chamber is flushed using the **liquid carbon dioxide**. The post CMP cleaning system is then depressurized to allow removal of the **wafer**. (*emphasis added*)

Concerning the co-solvent, the isopropanol and the reducing agent, Mullee, William H. teaches the following:

The chemical is alternatively selected from an alternative group including the **alcohols** related to the **isopropyl alcohol**, the carbonates related to the propylene

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carbonate, the glycols related to the ethylene glycol, the fluorides related to the **hydrogen fluoride**, the hydroxides related to the ammonium hydroxide, and the acids related to the **citric acid**, or a mixture selected from these chemicals and the preferred group. (*emphasis added; noting that hydrogen fluoride and citric acid are well-known reducing agents*)

7. Claims 1-6, 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Koch, Robert (US6331487).

Concerning the supercritical fluid, photoresist and the claimed supercritical gas, Koch, Robert teaches the following:

The post-CMP cleaning process of the present invention includes the following steps. The **wafer** is placed in the **wafer** process chamber. The post-CMP cleaning system is preferably purged with inert gas or the **carbon dioxide**. Alternatively, the post-CMP cleaning system is not purged. Next, the post-CMP cleaning system is pressurized with the **carbon dioxide** to achieve **supercritical** conditions. A desired amount of the chemical is added into the **carbon dioxide**, which forms chemical laden **supercritical carbon dioxide**. The chemical-laden **supercritical carbon dioxide** is contacted with the **wafer**. The **wafer** process chamber is preferably flushed using the **supercritical carbon dioxide** to remove contaminants. Alternatively, the **wafer** process chamber is flushed using the **liquid carbon dioxide**. The post CMP cleaning system is then depressurized to allow removal of the **wafer**. (*emphasis added*)

Concerning the co-solvent, claimed reducing agent and the isopropanol, Koch, Robert teaches the following:

The chemical is alternatively selected from an alternative group including the **alcohols** related to the **isopropyl alcohol**, the carbonates related to the propylene carbonate, the glycols related to the ethylene glycol, the fluorides related to the **hydrogen fluoride**, the hydroxides related to the ammonium hydroxide, and the acids related to the citric acid, or a mixture selected from these chemicals and the preferred group. (*emphasis added; noting that hydrogen fluoride is a well-known reducing agent*)

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8. Claims 1-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Cotte, John Michael (US6398875).

Concerning the supercritical fluid, photoresist and the claimed supercritical gas, Cotte, John Michael teaches the following:

To ensure effective removal of the water-containing film from the **semiconductor wafer**, the **semiconductor wafer** is exposed to the liquid or **supercritical carbon dioxide**-containing composition, under the above conditions, for about 2 minutes to about 30 minutes. More preferably, the time period of exposure of the **wafer** to the **carbon dioxide** liquid or **supercritical fluid** composition, under the above-identified conditions, is about 2 minutes. (*emphasis added*)

Concerning the co-solvent, Cotte, John Michael teaches the following:

A **co-solvent**, if present in the composition, is preferably included in a concentration in the range of between about 1% and about 25% by volume, based on the total volume of the **co-solvent** and the liquid or supercritical carbon dioxide. More preferably, the concentration of the **co-solvent** is in the range of between about 5% and about 10% by volume, based on the total volume of the **co-solvent** and liquid or supercritical CO.sub.2. Most preferably, the **co-solvent**, if included, is present in a concentration of between about 6% and about 8% by volume, based on the total volume of the solvent and the liquid or supercritical CO.sub.2. (*emphasis added*)

Concerning the claimed reducing agent and the formic acid, Cotte, John Michael teaches the following:

In the preferred embodiment wherein the solvent is a diacid, oxalic acid is preferred. In the preferred embodiment wherein a carboxylic acid is utilized, **formic acid**, acetic acid or perfluoroacetic acid is particularly preferred. (*emphasis added*)

Concerning the isopropanol, Cotte, John Michael teaches the following:

Another method of drying semiconductor substrates advanced in the prior art involves the use of so-called "vapor dryers". In this method a vapor, of which **isopropanol** and fluorinated hydrocarbons are preferred, is condensed on the surface of a semiconductor wafer to flush aqueous liquid therefrom. Examples of this method are provided in U.S. Pat. Nos. 5,055,138; 5,183,067; 5,243,768; 5,351,419; and 5,371,950. (*emphasis added*)

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Claims 1-3, 6-9, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Biberger, Maximilian A. (US6890853).

Concerning the supercritical fluid and the claimed supercritical gas, Biberger, Maximilian A. teaches the following:

The preferred method 20 comprises a **supercritical** preclean step 22, a **supercritical** desorb step 24, and a metal deposition step 26. In the **supercritical** preclean step 22, the substrate is maintained in a **supercritical** chamber and is preferably exposed to **supercritical carbon dioxide** and a chelating agent. The chelating agent in conjunction with the **supercritical carbon dioxide** reacts with an oxide on the underlying metal layer to form chelates of the underlying metal. The **supercritical carbon dioxide** carries away the chelates. In the **supercritical** desorb step 24, the substrate is maintained within the **supercritical** chamber and exposed to **supercritical carbon dioxide**, which desorbs adsorbed materials or absorbed materials from the substrate. (*emphasis added*)

Concerning the co-solvent, Biberger, Maximilian A. teaches the following:

Alternatively, in the preclean step 22, the chelating agent and the acid are replaced by an amine. The amine acts to dissolve the oxide and to carry away metal ions. Preferably, the amine is selected from the group comprising **triethanolamine**, **2-methylaminoethanol**, **pyridine**, **2,2'-bipyridine**, and **pentamethyldiethylenetriamine**. (*emphasis added*)

Concerning the claimed reducing agent and the formic acid, Biberger, Maximilian A. teaches the following:

Preferably, the acid is selected from the group comprising an organic acid or an inorganic acid depending upon the particular oxide that is being precleaned. Preferably, the organic acid is used for a preclean of copper oxide. More preferably, for the preclean of copper oxide, the organic acid is selected from the group comprising **acetic acid**, **formic acid**, oxalic acid and malonic acid; alpha hydroxy acids such as glycolic acid, citric acid, malic acid or lactic acid; or amino acids such as glycine, alanine, leucine, valine, glutamine or lysine. (*emphasis added*)

Concerning the photoresist, Biberger, Maximilian A. teaches the following:

A fourth alternative method of the present invention is schematically illustrated in FIG. 2. The fourth alternative method 30 adds a supercritical residue removal step 32 to the preferred method 20. The supercritical residue removal step 32 removes residue remaining on the substrate following a preceding etching step. In the preceding etching step, **photoresist** masks portions of the substrate so that only unmasked portions of the substrate are etched. The etching step also etches the **photoresist**, which is sometimes etched to completion. Generally, following the etching step there is some remaining **photoresist** on the substrate and there is also etch residue and **photoresist** residue on the substrate. Thus, the residue remaining on the substrate following the etching step includes the **photoresist** residue, the

etch residue, and possibly the remaining **photoresist**. The supercritical residue removal step 32 comprises exposing the substrate with the residue to the supercritical carbon dioxide and a solvent until the residue is removed from the substrate. The supercritical residue removal step 32 is the subject of U.S. patent application Ser. No. 09/697,227 filed on Oct. 25, 2000, which is incorporated by reference in its entirety. (*emphasis added*)

Claims 1-6, and 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Biberger, Maximilian A. (US6500605).

Concerning the supercritical fluid and the claimed supercritical gas, Biberger, Maximilian A. teaches the following:

Upon reaching initial **supercritical** conditions, the first injection pump 249 pumps the amine and the solvent from the chemical supply vessel 228 into the pressure chamber 226 via the circulation line 242 while the **carbon dioxide** pump further pressurizes the **supercritical carbon dioxide** in the third process step 206. Once a desired amount of the amine and the solvent has been pumped into the pressure chamber 226 and desired **supercritical** conditions are reached, the **carbon dioxide** pump 224 stops pressurizing the pressure chamber 226, the first injection pump 249 stops pumping the amine and the solvent into the pressure chamber 226, and the circulation pump 230 begins circulating the **supercritical carbon dioxide**, the amine, and the solvent in the fourth process step 208. By circulating the **supercritical carbon dioxide**, the amine, and the solvent, the **supercritical carbon dioxide** maintains the amine, and the solvent in contact with the wafer. Additionally, by circulating the **supercritical carbon dioxide**, the amine, and the solvent, a fluid flow enhances removal of the photoresist and the residue from the wafer. (*emphasis added*)

Concerning the co-solvent and the isopropanol, Biberger, Maximilian A. teaches the following:

In the sixth process step 212, the second injection pump 253 pumps a rinse agent from the rinse agent supply vessel 250 into the pressure chamber 226 via the circulation line while the carbon dioxide pump 224 pressurizes the pressure chamber 226 to near the desired supercritical conditions and, then, the circulation pump 230 circulates the supercritical carbon dioxide and the rinse agent in order to rinse the wafer. Preferably, the rinse agent is selected from the group consisting of water, **alcohol**, acetone, and a mixture thereof. More preferably, the rinse agent is the mixture of the **alcohol** and the water. Preferably, the **alcohol** is selected from the group consisting of **isopropyl alcohol**, **ethanol**, and other low molecular weight **alcohols**. More preferably, the **alcohol** is selected from the

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group consisting of the **isopropyl alcohol** and the **ethanol**. Most preferably, the **alcohol** is the **ethanol**. (*emphasis added*)

Concerning the claimed reducing agent, Biberger, Maximilian A. teaches the following:

A method of removing photoresist and residue from a substrate begins by maintaining supercritical carbon dioxide, an amine, and a solvent in contact with the substrate so that the amine and the solvent at least partially dissolve the photoresist and the residue. Preferably, the amine is a tertiary amine. Preferably, the solvent is selected from the group consisting of DMSO, EC, NMP, acetyl acetone, BLO, **acetic acid**, DMAC, PC, and a mixture thereof. Next, the photoresist and the residue are removed from the vicinity of the substrate. Preferably, the method continues with a rinsing step in which the substrate is rinsed in the supercritical carbon dioxide and a rinse agent. Preferably, the rinse agent is selected from the group consisting of water, alcohol, a mixture thereof, and acetone. In an alternative embodiment, the amine and the solvent are replaced with an aqueous fluoride. (*emphasis added; noting that acetic acid is a well-known acetic acid*)

Concerning the photoresist and the ion implantation photoresist removal, Biberger, Maximilian A. teaches the following:

The present invention is a method of **removing photoresist** and residue from a substrate using supercritical carbon dioxide. The residue includes **photoresist** residue and etch residue. Generally, the substrate is a **semiconductor wafer**. Alternatively, the substrate is a non-wafer substrate such as a puck. Typically, the **photoresist** was placed on the **wafer** to mask a portion of the **wafer** in a preceding **semiconductor** fabrication process step. Such preceding process steps include **ion implantation** and etching steps. (*emphasis added*)

Claims 1-3, 6-9, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Cotte, John Michael (US20020088477).

Concerning the supercritical fluid, co-solvent and the claimed supercritical gas, Cotte, John Michael teaches the following:

[0024] The **supercritical fluid**, which comprises **supercritical carbon dioxide** and the **co-solvent**, is preferably present such that the **co-solvent** represents less than about 20% of the total volume of the **supercritical fluid**. More preferably, the **supercritical fluid** comprises between about 1% and about 10% **co-solvent** and the remainder **supercritical carbon dioxide**, based on the total volume of the **supercritical fluid**. (*emphasis added*)

Concerning the claimed reducing agent and the formic acid, Cotte, John Michael teaches the following:

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5. A process in accordance with claim 4 wherein said solvent is selected from the group consisting of oxalic acid, **formic acid**, **acetic acid** and **perfluoroacetic acid**. (*emphasis added*)

Concerning the photoresist, Cotte, John Michael teaches the following:

[0029] The **semiconductor wafer** or sample, illustrative of a typical workpiece 16, employed in the present invention is any **semiconductor** sample that is subjected to CMP. Illustrated examples of suitable **semiconductor** samples that may be used in the present invention include, but are not limited to, **semiconductor wafers**, **semiconductor** chips, ceramic substrates, patterned film structures and the like. For example, the workpiece 16 may include one or more of the following materials: titanium silicide, tantalum nitride, tantalum silicide, silicon, polysilicon, silicon nitride, SiO.sub.2, diamond-like carbon, polyimide, polyamide, aluminum, aluminum with copper, copper, tungsten, titanium, palladium, platinum, iridium, chromium, ferroelectric materials and high dielectric materials such as BaSrTi or PbLaTi oxides. (*emphasis added*)

9. Claims 1-3, 6-9, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Cotte, John Michael (US6425956).

Concerning the supercritical fluid, co-solvent and the claimed supercritical gas, Cotte, John Michael teaches the following:

The **supercritical fluid**, which comprises **supercritical carbon dioxide** and the **co-solvent**, is preferably present such that the **co-solvent** represents less than about 20% of the total volume of the **supercritical fluid**. More preferably, the **supercritical fluid** comprises between about 1% and about 10% **co-solvent** and the remainder **supercritical carbon dioxide**, based on the total volume of the **supercritical fluid**. (*emphasis added*)

Concerning the claimed reducing agent and the formic acid, Cotte, John Michael teaches the following:

8. A process in accordance with claim 5 wherein said co-solvent is selected from the group consisting of oxalic acid, **formic acid**, **acetic acid** and **perfluoroacetic acid**. (*emphasis added*)

Concerning the photoresist, Cotte, John Michael teaches the following:

The **semiconductor wafer** or sample, illustrative of a typical workpiece 16, employed in the present invention is any **semiconductor** sample that is subjected to CMP. Illustrated examples of suitable **semiconductor** samples that may be used in the present invention include, but are not limited to, **semiconductor**

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wafers, semiconductor chips, ceramic substrates, patterned film structures and the like. For example, the workpiece 16 may include one or more of the following materials: titanium silicide, tantalum nitride, tantalum silicide, silicon, polysilicon, silicon nitride, SiO₂, diamond-like carbon, polyimide, polyamide, aluminum, aluminum with copper, copper, tungsten, titanium, palladium, platinum, iridium, chromium, ferroelectric materials and high dielectric materials such as BaSrTi or PbLaTi oxides. (*emphasis added*)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory E. Webb whose telephone number is 571-272-1325.

The examiner can normally be reached on 9:00-17:30 (m-f).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglass McGinty can be reached on (571)272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Gregory E. Webb
Primary Examiner
Art Unit 1751